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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SAKELARIS, SALLY A

ART UNIT PAPER NUMBER

1634

DATE MAILED: 01/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/955,858

Applicant(s)

ARAI, YUJIN

Examiner

Sally A Sakelariss

Art Unit

1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-6, 8 and 9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-6, 8 and 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1. ☐ Certified copies of the priority documents have been received.
 - 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

This action is written in response to applicant's correspondence submitted 11/13/2003. Claims 1, 3-6, 8, and 9 have been amended, claims 2 and 7 have been canceled, and no claims have been added. Claims 1, 3-6, 8 and 9 are pending. Applicant's amendments and arguments have been thoroughly reviewed, but are not persuasive for the reasons that follow. Any rejections not reiterated in this action have been withdrawn in response to applicants amendments to the claims. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. **This action is FINAL.**

Priority

1. Acknowledgement of claim to foreign priority of Japanese Application, 287618, filed 9/21/2000 under 35 U.S.C. 119(a)-(d) has been made, however applicant should note that the translation of this foreign priority document has not yet been received and as a result the priority document cannot be relied upon to overcome the cited prior art.

THE FOLLOWING ARE NEW REJECTIONS NECESSITATED BY APPLICANT'S AMENDMENTS TO THE CLAIMS

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rava et al.(US Patent 5,874,219 issued 23 February 1999) in view of Howlett et al.(US Patent issued 20 January 1998).

Regarding claim 1, Rava et al. disclose a method of image data acquisition comprising scanning a sample, which includes a plurality of spots(Col. 2 lines 3-6) on a substrate with a light beam(Col. 6 lines 5-10); acquiring scanned image data by receiving a light from the sample, and sequentially storing the acquired scanned image data; and storing the scanned image data obtained by scanning a region(defined in specification as “strip”) of a predetermined size every time a region scanned by the light reaches a predetermined size(ie. a “strip”), sequentially (Column 5 lines 45-56, Column 6 lines 40-53). Rava et al. disclose the image data acquisition method above wherein, the size of the scanned region by the light is changed according to an arrangement position thereof, when a plurality of measurement objects are arranged in the sample(Claims 16(b) and Claim 34(b)). Rava et al. teach in the cited claims that the size of the scanned region is changed through “the means for focusing the excitation light to a point on a substrate”(Cln 34) and further by using the “optics for directing an excitation light”(Cln 16).

Regarding claim 3, Rava et al. disclose the image data acquisition method of claim 1 wherein, the sequentially stored acquired scanned image data is stored by adding position information regarding respective scanning regions thereto in so much as the reference teaches that the “biological chip reader can include auto-focusing feature to maintain the sample in the focal plane of the excitation light throughout the scanning process”(Col. 5 lines 63-65) and

further that a “multi-axis translation stage moves the device at a constant velocity to continuously integrate and process data”(Col. 6 lines 52-54).

Regarding claim 4, Rava et al. disclose the image data acquisition method according to claim 2, wherein the sample is a DNA microarray in which a plurality of spots are arranged as a measurement object, and the size of the scanning region(strip) is such that a boundary in the scanning region is not overlapped on the spot(Column 6 lines 49-50, Column 12 lines 1-9). In referencing the specification on page 18, it appears that “boundary” is meant to define the outer edges of the region(strip) and as a result this claim’s embodiment is taught in Rava et al.’s teaching that in their method, “a strip has been scanned”(Col. 6). Applicant should note that since only a strip has been scanned, a boundary in the scanning region is not overlapped on the spot as the boundary is understood to exist outside the spots and in this example each strip(region including spots) is scanned; not a strip and a spot, or not spots overlapping the strip boundary.

Regarding claim 6, Rava et al. teach the data acquisition method of claim 1 wherein an analysis processing is executed for the stored scanned image data in parallel with scanning of a next region(strip) when the storage of the scanned image data completes(Column 6 lines 40-53). In column 6 the reference teaches that “once a strip has been scanned, the data representing the 1-dimensional image are stored in the memory of the computer” and further that “simultaneously scanning or imaging a strip of the sample” occurs in order to “continuously integrate and process data”(Col. 6, lines 40-53). Rava et al. do not teach the above method wherein the size of the scanning region is adjusted based on the acquired scanned image data such that boundaries of adjacent scanning regions do not overlap the plurality of spots on the substrate.

However, the method wherein the size of the scanning region is adjusted based on the acquired scanned image data such that boundaries of adjacent scanning regions do not overlap the plurality of spots on the substrate was well known in the art at the time the claimed invention was made as taught by Howlett et al.(US Patent 5,710,880) who teach a similar data acquisition method wherein a provision is made for a method of “creating graphic images that can be scaled to different point sizes to accommodate different display device resolutions”(Col. 5, lines 35-48). The reference thus teaches that following the input of a plurality of geometric descriptors(specified point size, pixel size etc.) “the scaling logic 32 outputs the scaled geometric descriptors to the hinter 34 that can execute a set of routines that adjust the shape of the scaled geometric descriptors for the requested point size and resolution to fit the appropriate boundaries of the pixel grid”(Col. 9 lines 18-35). Thus the reference teaches that the “hinter 34 outputs to the scan converter 36 geometric descriptors that have been scaled for the selected size and device resolution and adjusted to the appropriate boundaries of the pixel grid”(Col. 9 lines 36-40) It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the image-scaling approach of Howlett et al. to the data acquisition method of Rava et al. for “creating graphic images that can be scaled to various point sizes, thereby supporting the conservation of the finite resource of computer memory by minimizing the number of character bitmaps required to display these scalable graphic(Col. 5, lines 35-48).

Response to Arguments:

Applicants argument directed to Rava et al.’s lacking a “disclosure, teaching, or suggestion that the scanning region is adjusted based on the scanned image data”(Applicant’s response page 7) is

made moot by the examiner's new rejection under 35 USC § 103 of amended claims 1, 3, 4, and 6 that makes obvious this limitation in view of the Howlett et al. reference.

3. Claims 5, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rava et al.(US Patent 5,874,219 issued 23 February 1999) in view of Howlett et al.(US Patent issued 20 January 1998), in further view of Kimura et al.(US Patent 6,458,601 B1 issued 1 October 2002) and in an even further view of the Webster Dictionary.

Regarding claims 5, 8, and 9 Rava et al. disclose a method of image data acquisition comprising scanning a sample by a light; receiving a light from the sample, to acquire a scanned image data; and storing the scanned image data obtained by scanning a region(defined in specification as "strip") of a predetermined size every time a region scanned by the light reaches a predetermined size(i.e. strip), sequentially(Column 5 lines 45-56, Column 6 lines 40-53). Rava et al. disclose that "a beam is focused onto a spot of about 2um in diameter on the surface of the plate using, for example, the objective lens of a microscope or other optical means to control beam diameter"(Col. 6, lines 5-9). Rava et al. also disclose the image data acquisition method of above wherein, the size of the scanned region by the light is changed according to an arrangement position thereof, when a plurality of measurement objects are arranged in the sample(Claims 16(b) and Claim 34(b)). Rava et al. teach in the cited claims that the size of the scanned region is changed through "the means for focusing the excitation light to a point on a substrate"(Clm 34) and further by using the "optics for directing an excitation light"(Clm 16). Rava et al. also teaches "moving the device[sample] at a constant velocity to continuously integrate and process data"(Col. 6 lines 52-53). Lastly, Rava et al. teach that the main scanning is carried out by an optical scanner(Column 6, lines 40-49). Rava et al. do not teach the above

method wherein the size of the scanning region is adjusted based on the acquired scanned image data such that boundaries of adjacent scanning regions do not overlap the plurality of spots on the substrate. However, the method wherein the size of the scanning region is adjusted based on the acquired scanned image data such that boundaries of adjacent scanning regions do not overlap the plurality of spots on the substrate was well known in the art at the time the claimed invention was made as taught by Howlett et al.(US Patent 5,710,880) who teach a similar data acquisition method wherein a provision is made for a method of “creating graphic images that can be scaled to different point sizes to accommodate different display device resolutions”(Col. 5, lines 35-48). The reference thus teaches that following the input of a plurality of geometric descriptors(specified point size, pixel size etc.) “the scaling logic 32 outputs the scaled geometric descriptors to the hinter 34 that can execute a set of routines that adjust the shape of the scaled geometric descriptors for the requested point size and resolution to fit the appropriate boundaries of the pixel grid”(Col. 9 lines 18-35). Thus the reference teaches that the “hinter 34 outputs to the scan converter 36 geometric descriptors that have been scaled for the selected size and device resolution and adjusted to the appropriate boundaries of the pixel grid”(Col. 9 lines 36-40) It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the image-scaling approach of Howlett et al. to the data acquisition method of Rava et al. for “creating graphic images that can be scaled to various point sizes, thereby supporting the conservation of the finite resource of computer memory by minimizing the number of character bitmaps required to display these scalable graphic(Col. 5, lines 35-48).

Rava et al. do not further teach the above methods of claims 5, 8, and 9 wherein the scanning light is performed by main scanning and sub-scanning in a direction orthogonal to the

main scanning. However, the scanning of a DNA microarray chip wherein the scanning light is carried out by main scanning and sub-scanning in a direction orthogonal thereto (where orthogonal is defined as Webster to be “intersecting or lying at right angles”) was well known in the art at the time the claimed invention was made as taught by Kimura et al. (Column 4, lines 45-55) who teach a similar data acquisition method wherein a sub-scanning system works in a direction perpendicular to that of the main scanning system. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the main and sub-scanner scanning approach of Kimura et al. to the data acquisition method of Rava et al. in view of Howlett et al. for the expected benefit that “in the microarray technique, it is necessary to precisely two-dimensionally scan the microarray chip coated with cDNAs at a high density” (Kimura, Col.1) and therefore for the known success of scanning a DNA microarray for the obvious benefits of obtaining such expected results.

Response to Arguments:

Applicants arguments directed to the previous rejection made by the combination of Rava et al. in view of Kimura et al. are considered moot following the amendments to the claims and the subsequent addition of a new rejection in further view of Howlett et. al. as asserted in the above rejections. It is now asserted that the present rejections disclose, teach, and suggest an image data acquisition method including sequentially storing the acquired scanned image data obtained by scanning a region of a predetermined size wherein the size of the scanning region is adjusted based on the acquired scanned image data such that boundaries of adjacent scanning regions do not overlap the plurality of spots on the substrate.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Sally Sakelaris whose telephone number is (703) 306-0284. The examiner can normally be reached on Monday-Thursday from 7:30AM-5:00PM and Friday from 1:00PM-5:00PM.

If attempts to reach the examiner are unsuccessful, the primary examiner in charge of the prosecution of this case, BJ Forman, can be reached at (703)306-5878. If attempts to reach the examiners are unsuccessful, the examiner's supervisor, Gary Benzion, can be reached on (703)308-1119. The fax number for the Technology Center is (703)305-3014 or (703)305-4242.

Any inquiry of a general nature or relating to the status of this application should be directed to Chantae Dessau whose telephone number is (703)605-1237.

Sally Sakelaris


1/20/2004


BJ FORMAN, PH.D.
PRIMARY EXAMINER